Listing of the Claims:

Claims 1-22 (Canceled).

Claim 23 (New): A system for controlling a combustion process in a motor vehicle internal combustion engine, characterized by an optical system for detecting the concentration of gaseous species, mounted on an exhaust duct of the engine, and comprising at least one source of ultraviolet and/or visible radiation and a photodetector device opposite that source, between which there flows an exhaust gaseous mixture, wherein the said radiation source is adapted to locally excite the gaseous mixture so as to bring about a combined absorption and emission effect by the exhaust gaseous species present, and wherein the said photodetector device comprises an active material based on gallium nitride (GaN), aluminium nitride (AlN) or indium nitride (InN) and corresponding alloys and is adapted to determine the concentration of the gaseous species present in the mixture through detection of the change in the spectrum emitted by the source.

Claim 24 (New): A system according to Claim 23, in which the said system for detecting the concentration of gaseous species includes heating means adapted to stabilize and maintain a predetermined operating temperature in the photodetector device to encourage the decomposition of unburnt residues and prevent the deposition of carbonaceous and non-carbonaceous residues.

Claim 25 (New): A system according to Claim 23, characterized in that spectral discrimination of the different absorption lines is effected by engineering the electronic band structure of the photodetector device, that is by alternating layers of different

materials so as to form quantum wells.

Claim 26 (New): A system according to Claim 23, characterized in that spectral discrimination of the different absorption lines is effected by engineering the photonic band structure of the photodetector device, that is by permitting only specific photon transitions through constructing photonic crystal optical microresonators.

Claim 27 (New): A system according to any of Claims 23 to 26, characterized in that the active material comprised in the photodetector device is massive gallium nitride adapted to detect spectral lines having a wavelength of 360 nm or higher.

Claim 28 (New): A system according to any of Claims 23 to 26, characterized in that the active material comprised in the photodetector device is gallium aluminium nitride ($Al_xGa_{1-x}N$ with $0 \leq x \leq 1$) adapted to detect spectral lines having a wavelength varying between 206 nm and 360 nm as x varies.

Claim 29 (New): A system according to any of Claims 23 to 26, characterized in that the active material comprised in the photodetector device is gallium indium nitride ($In_xGa_{1-x}N$, with $0 \leq x \leq 1$) adapted to detect spectral lines having a wavelength varying between 360 nm and 500 nm as x varies.

Claim 30 (New): A system according to any of Claims 23 to 26, characterized in that the active material comprised in the photodetector device includes quantum wells of GaN/AlGaN or InGaN/GaN.

Claim 31 (New): A system according to any of Claims 27 to 30, characterized in that the said active material is inserted into a device which has co-planar metal-semiconductor-metal contacts.

Claim 32 (New): A system according to any of Claims 27 to 30, characterized in that the said active material has a heterostructure with a p-i-n structure.

Claim 33 (New): A system according to any of Claims 27 to 30 when dependent upon Claim 4, characterized in that the photonic crystal microresonator device has a vertical cavity structure for the selection of a single atomic absorption line produced during a stage of epitaxial growth including a central waveguide region containing the absorbent material inserted between two Bragg-type reflectors.

Claim 34 (New): A system according to any of Claims 27 to 30, characterized in that the photodetector device has a structure based on two-dimensional photonic crystals.

Claim 35 (New): A system according to Claims 23-26, characterized in that it comprises a matrix of photodetector devices which can be controlled independently and which comprise different active materials among gallium nitride (GaN), aluminium nitride (AlN), indium nitride (InN) and corresponding alloys, adapted to operate at respectively different spectral frequencies.